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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/367,714	01/14/00	SHAI Y	SHAI-2

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EXAMINER	
LUKTON,D	

ART UNIT	PAPER NUMBER
1653	15

DATE MAILED: 05/03/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
09/367,714	Shai
Examiner	**Art Unit**
David Lukton	1653

-- The MAILING DATE of this communication appears on the cover she t with the correspondenc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on Jan 4, 2001

2a) ☐ This action is **FINAL.** 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-26 is/are pending in the applica

4a) Of the above, claim(s) 2-5, 15, and 16 is/are withdrawn from considera

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 1, 6-14, and 17-26 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirem

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)

16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____

18) ☐ Interview Summary (PTO-413) Paper No(s). _____

19) ☐ Notice of Informal Patent Application (PTO-152)

20) ☐ Other:

Applicants election of Group I (claims 1-5, 7-12, 18-26, limited to cytolytic agents of subgenus G3) without traverse is acknowledged. Applicants' species election is also acknowledged. Applicants have elected the peptide of SEQ ID NO: 24. However, applicants have erroneously stated that this peptide is present in claim 12; it is instead present in claim 13. The peptide of SEQ ID NO: 24 is a linear peptide; as such, claims 2-5 do not encompass it, and claims 2-5 are withdrawn from consideration.

Claims 6, 13, 14, 17 are examined in this Office action; in addition, claims 1, 7-12, 18-26 are examined *in part*.

*

The following is a quotation of the first paragraph of 35 U.S.C. §112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it in such full, clear, concise and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 22-26 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Each of claims 22-26 recite the term "pharmaceutical". This term carries with it the implied assertion of therapeutic efficacy. Such efficacy, however, is not in evidence. Applicants have demonstrated inhibition of bacterial growth *in vitro* for several peptides.

Applicants have also shown (pp. 51+) that peptides 1 and 16 are effective against *Candida albicans* and *cryptococcus neoformans* in vitro. Applicants have also shown (pp. 52+) that peptides 23 and 24 inhibit proliferation of mouse adenocarcinoma cells. Also presented (p. 53) is data indicating inhibition of *leishmania mexicana* in vitro. In addition, on page 53-54 it is stated that peptide 23 will inhibit viral-induced hemolysis *in vitro*. It is stipulated at this point that each of these inhibitory processes will occur *in vivo* as well. But that does not mean that any of the peptides will be effective therapeutically. For example, if bacteria are reproducing at a rate of 100 "units" per day (in a mammal) in the absence of the peptides, and 90 units per day in their presence, one could say that inhibition had been achieved. But it does not necessarily follow therefrom that the patient's condition will improve. If the bacteria are still reproducing at a rate of 90 units per day, their population will continue to increase, in spite of the inhibitory peptide that is present; the patient's condition will only worsen. It is suggested that the terms "pharmaceutical" and "pharmaceutically" be deleted from the claims. (This will actually result in an incremental increase in scope). In addition, the phrase"treatment of infections" should be deleted from claim 23. It is suggested that applicants claim any or all of the following:

A composition comprising an acceptable carrier and a peptide according to claim 1 in an amount effective to inhibit bacterial growth.

A composition comprising an acceptable carrier and a peptide according to claim 1 in an amount effective to inhibit proliferation of bacteria.

A composition comprising an acceptable carrier and a peptide according to claim 1

in an amount effective to inhibit growth of fungi.

A composition comprising an acceptable carrier and a peptide according to claim 1 in an amount effective to inhibit proliferation of a fungus.

A composition comprising an acceptable carrier and a peptide according to claim 1 in an amount effective to inhibit proliferation of carcinoma cells.

A composition comprising an acceptable carrier and a peptide according to claim 1 in an amount effective to inhibit viral-induced hemolysis.

*

Claims 14 and 17 contain underlining or brackets that are apparently intended to appear in the printed patent or are properly part of the claimed material. The brackets or underlining as used by the applicant are not intended to indicate amendments or changes in the claims as provided in 37 CFR 1.121(a)(2)(ii). Since underlining and brackets are normally used to indicate insertions and deletions, it is confusing to use the same in instances where the applicant desires to have the underlining and brackets appear in the published patent. If underlining or brackets are intended to appear as part of the printed patent claim, such claim should be presented in unamended form as a new claim, i.e., without the designation (amended), (twice amended), etc. as required by 37 CFR 1.121(a)(1)(B).

It is suggested that a new system be adopted. For example, the L-amino acids could be represented in lowercase, and the D-amino acids in upper case (or vice versa) ; for example, the peptide of SEQ ID NO: 24 could be represented as follows:

lys-leu-LEU-LEU-lys-leu-lys-LEU-lys-LEU-leu-lys-NH_2

Alternatively, single-letter abbreviations could be used, with L-amino acids represented in lowercase, and D-amino acids in upper case (or vice versa).

*

Claims 1, 6-14, 17-26 are rejected under 35 U.S.C. §112 second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- Claim 1 recites (lines 1-2) "bundled peptides". This renders the claims indefinite as to the intended physical structure.

- Claim 1 is drawn to an "agent" which can be a mixture. However, this renders the claims indefinite. It is suggested that claim be limited to a single peptide, and that a claim be added which recites a mixture of two or more peptides according to claim 1.

- Claim 1 recites (second line from last) that the copolymer consists of "different ratios". What is intended...for a given copolymer, isn't there just one ratio?

- Claim 6 is dependent on a non-elected claim (claim 5).

- Claim 7, line 1 employs the designation "claim 1(2)". While it is possible to determine what is intended, it nevertheless generates some confusion. One option would be to amend claim 1 to use the designations "A)", "B)", "C)", etc. See also claim 20.

- Claim 8 makes reference to "varying ratios". Isn't there just one ratio for a given peptide?

- Claim 10 recites that the hydrophobicity "may be decreased". This renders the claim indefinite as to whether the hydrophobicity is in fact decreased.

- Claim 14 recites that the four recited peptides are cyclic. However, the manner in which peptides 92 and 93 is cyclic is not made clear. Are these cyclic by virtue of a disulfide bond?

- Claim 17 is dependent on a non-elected claim.

- The intended structure of claim 17 is indefinite. Whether or not claim 17 is amended in any way, applicants are requested to explain the nature of the structure, so that agreeable language can be fashioned.

- Claim 19 is indefinite. Either of the following is suggested:

  The mixture of claim 18 wherein each peptide present in the mixture consists of 12 amino acids, each of which is selected from the group consisting of L-leu, D-Leu, L-Lys and D-lys.

  The mixture of claim 18 comprising a first peptide and at least one additional peptide, wherein each additional peptide is a diasteriomer of the first peptide, and wherein the first peptide consists of 12 amino acids, each of which is selected from the group consisting of L-leu, D-Leu, L-Lys and D-lys.

*

The following is a quotation of the appropriate paragraphs of 35 U.S.C §102 that form the basis for the rejections under this section made in this action.

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2) and (4) of section 371(c) of this title before the invention thereof by the applicant for the patent.

Claims 1, 2, 7-11 are rejected under 35 U.S.C. §102(e) as being anticipated by Maloy (U.S.P. 5,792,831).

Maloy teaches cytolytic peptides containing D-amino acids.

Thus, the claims are anticipated.

*

Claim 1 is rejected under 35 U.S.C. §102(b) as being anticipated by Shai (*J. Biol. Chem.* 271, 7305, 1996)

Shai teaches (p. 7308, col 1, 1st paragraph) that the peptide designated " $(D)P^{7}L^{18}L^{19}$ " is antibacterial but non-hemolytic.

Thus, the claim is anticipated.

*

Claim 1 is rejected under 35 U.S.C. §102(b) as being anticipated by Oren (*J. Biol. Chem.* 272 14643, 1997).

Oren teaches a few peptides which are antibacterial, but only minimally hemolytic.

Thus, the claim is anticipated.

*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Lukton. Phone: (703) 308-3213.

An inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0196.

DAVID LUKTON
PATENT EXAMINER
GROUP 1809